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FURNITURE TECHNICIAN

CBT CURRICULUM

National Vocational Certificate Level 2

Version 1 - April, 2019

NAVTTC

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Introduction

Furniture industry is mainly originated from n Gujrat, since the era of Sikandar-e-Azam (The Great Alexander). With the passage of time it has developed to make it pioneer and still leading in furniture manufacturing in one or another way with a steady production and exports. Gujrat is also considered as City of Furniture. Its wide scope, importance, demand, urbanization, elegance is now growing in various areas of Pakistan especially in Karachi, Lahore, Azad Jammu & Kashmir, Peshawar, Rawalpindi, Chiniot, Hunza etc. With changes in designs and trends in Pakistan as well as around the globe; furniture industry looks forward to adopt latest manufacturing techniques and technology and tap the needs of export market. Industry requirement for educated and skilled workforce is increasing which can only be managed through setting relevant competency standards in collaboration with the leading industries. Being cognizant of this fact, National Vocational & Technical Training Commission (NAVTTC) developed competency standards for Furniture Technician under National Vocational Qualifications Framework (NVQF). These competency standards have been developed by a Qualifications Development Committee (QDC) and validated by the Qualifications Validation Committee (QVC) having representation from the leading furniture manufacturing companies of the country under the platform of All Pakistan Furniture Makers Association (APFMA) and Technical Education & Vocational Training Authority (TEVTA).

A Furniture Technician is a tradesman who specializes in making wooden and metal furniture. This person is competent in preparing, joining and assembling wooden furniture components, applying upholstery, applying surface aesthetics including carving and marquetry manually utilizing hand tools / general machines as well as on CNC machines and perform finishing operations. Moreover, this person is able to prepare basic metal furniture, apply paint and powder coatings on metal furniture. The Furniture Technician is also able to develop drawings of furniture and its components manually as well as on CAD/CAM tools. The Furniture Technician will not only be hired by furniture manufacturers but he can also be able to start his own business.

Definition/ Description of the training Programme for Furniture Technician

The Furniture Technician Programme is to engage young people for the development of furniture manufacturing which will provide them with the knowledge, skills and understanding to start their career in Pakistan. The Programme has been developed to address specific issues, such as the national, regional and local requirements as per designs, the manpower availability within the country, meeting & exceeding the needs and expectations of their customers.

Date of Validation

The Curriculum Document is validated by Qualification Validation Committee on 12th November, 2019 in Islamabad.

Purpose of the Furniture Technician Programme

The purpose of this Programme is to set high professional standards for furniture industry considering the following objectives of developing these qualifications are as under:

- Improve the professional competence of the trainees
- Shift from informal and non-formal to formal technical and vocational training
- Provide opportunities for recognition of skills attained through non-formal or informal pathways
- Improve the quality and effectiveness of training and assessment for furniture sector
- Enable the existing workforce to capacitate themselves in new technologies and methods

Overall objectives of training Programme

The overall objectives of the Furniture Technician Programme are:

- Managing a wood workshop
- Selecting tools, machines, hardware and equipment used to saw, cut, join, and develop aesthetics on the wood & allied material.
- Measuring and drawing accurately as per design requirements
- Fabricating the different furniture articles from metals
- Finishing the furniture article by employing the latest polishing material and techniques
- Experiencing the latest techniques used to carve, upholster or cane the furniture articles
- Develop drawings & employing the advanced CNC machines to manufacture various parts of the furniture
- Working effectively and safely

Competencies to be gained after completion of course

After completing the course, the trainee will have attained the following competencies:

- Maintain the safe working environment

- Coordinate and work with the team
- Prepare reports of various section to manage work
- Supervise the furniture manufacturing operations
- Prepare Basic & advance joinery
- Prepare different wooden parts on woodworking machines
- Prepare & use the templates, jigs and fixtures as per requirement of the job
- Prepare different marquetry patterns as per design
- Prepare different carving patterns as per design
- Fabricate the metal furniture parts utilizing the appropriate machines
- Understand and application of different welding techniques
- Understand and application of basic and advance machine operations
- Understand and draw furniture drawing using CAD software
- Understand and operate CNC machines to process various operations
- Maintain production of furniture items
- Finish a completed furniture item using different polishing materials applying various techniques

Possible available job opportunities available immediately after Level 2

Furniture technicians are employed in factories, schools, Government offices, manufacturing hubs inland and abroad, and personal endeavors. Experienced furniture technicians may advance through promotions with the same employer or by moving to more advanced positions with other employers. They can become:

- Supervisor production
- Supervisor saw mill
- Site Supervisor
- Production Manager
- Drafting Assistant
- Foreman Workshop
- Work Preparation Assistant

- Machine Operator
- Packaging Assistant
- Product Handling Assistant
- Loading/ Unloading Supervisor
- Assembler

Trainee entry level

QUALIFICATION TITLE	ENTRY REQUIREMENTS
National Vocational Certificate Level 2 in Furniture Technician (Carpenter)	The entry requirement for this qualification is National Vocational Certificate Level 1 in Furniture Technician (Carpenter) or equivalent or Middle. The entry for assessment of this qualification is not specified.

Minimum qualification of trainer

F.A/ F.Sc./ D.A.E./ Certificate in Cabinet Making/ Woodworking/ Carpenter with minimum 6 year working experience in the relevant field. (Advance studies of relevant field is preferable)

Bachelors in science/technology/engineering + Certificate in Cabinet Making/Woodworking/Carpenter with minimum 3.5 years' experience in the relevant field

Recommended trainer: trainee ratio

The recommended maximum trainer: trainee ratio for this Programme is 1 trainer for 10-15 trainees.

Medium of instruction i.e. language of instruction

An appropriate mixture of English and Urdu may be used to ensure understanding of technical terms and aid students in potential jobs abroad.

Duration of the course (Total time, Theory & Practical time)

Total duration of the course is 2 Years consists of 120 credits including 24 credits of theory, 96 credits of practical training.

Competency Standards	Theory Hours	Workplace Hours	Total hours
Module 1: Comply Personal Health and Safety Guidelines			30
Module 2: Communicate the Workplace Policy and Procedure			20
Module 3: Perform Basic Communication (Specific)			30
Module 4: Perform Basic Computer Application (Specific)			40
Module 5: Develop drawings of furniture products manually	28	112	140
Module 6: Prepare wooden components of the furniture	12	48	60
Module 7: Make Furniture Joints	40	160	200
Module 8: Apply surface aesthetics	20	80	100
Module 9: Assemble Furniture Products	22	88	110

Sequence of the modules

This qualification is made up of 11 modules. Eleven modules relate to drawing, sawing wood & boards, initial processing, joinery, finishing and working on computer numerical controlled machines. A suggested distribution of these modules is presented overleaf.

The modules in level 2 represent the basics of the carpenter certification it involves the Module 1: Develop drawings of furniture products manually. This is interdependent with the identification & making of various parts as per their size devised in the drawing. Module 2: Make Furniture Joints is the core of this level and to the whole qualification of furniture technician. It involves the joinery skills from basics to advance. Module3: Prepare wooden components and Module 4: Apply Surface aesthetics adds to the completion of the job involving various steps, processes and techniques. Module 5: Assemble Furniture Products helps to complete the final assembly of the product.

Each module covers a range of learning components. These are intended to provide detailed guidance to teachers (for example the Learning Elements component) and give them additional support for preparing their lessons (for example the Materials Required component). The detail provided by each module will contribute to a standardized approach to teaching, ensuring that training providers in different parts of the country have clear information on what should be taught. Each module also incorporates the cultural background of Pakistan, including the woods and board material widely used for furniture manufacturing that make this qualification unique to Pakistan's needs.

The distribution table is shown below for level 2

<table>
<tr><td colspan="3">National Vocational Certificate Level 2 in Furniture Technician (Carpenter)</td></tr>
<tr><td rowspan="2">1. Develop drawings of furniture products manually</td><td>2. Make Furniture Joints</td><td rowspan="2">5. Assemble Furniture Products</td></tr>
<tr><td>3. Prepare wooden components of the furniture</td></tr>
</table>

	4. Apply Surface Aesthetics	

Summary – overview of the curriculum

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
Module 1: Comply Personal Health and Safety Guidelines	**LU1.** Identify Personal Hazards at Workplace **LU2.** Apply Personal Protective and Safety Equipment (PPE) **LU3.** Comply Occupational Safety and Health (OSH) **LU4.** Dispose of hazardous Waste/materials from the designated area.	6	24	30
Module 2: Communicate the Workplace Policy and Procedure	**LU1.** Identify workplace communication procedures **LU2.** Communicate at workplace **LU3.** Draft Written Information **LU4.** Review Documents	4	16	20
Module 3: Perform Basic Communication (Specific)	**LU1.** Communicate in a team to achieve intended outcomes **LU2.** Follow Supervisor's instructions as per organizational SOPs **LU3.** Develop Generic communication skills at workplace	6	24	30

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
Module 4: Perform Basic Computer Application (Specific)	**LU1.** Create Word Documents **LU2.** Use internet for Browsing	8	32	40
Module 5: Develop drawings of furniture products manually (072200890) Aim: The aim of this module to be develop knowledge, skills and understanding to develop drawings of furniture products manually.	LU1: Develop component and size chart LU2: Prepare 2D Multiview drawing of Furniture LU3: Prepare 2D Multiview drawing of Furniture Components	28	112	140
Module 6: Prepare wooden components of the furniture (072200891) Aim: The aim of this module to be develop knowledge, skills and understanding of preparing wooden components of the furniture.	LU1: Cut wood logs into Planks LU2: Prepare templates for furniture components LU3: Cut wood planks into furniture components LU4: Cut board/ panels into furniture components LU5: Plain surfaces of wooden components LU6: Finalize the size of wooden components	12	48	60

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
Module 7: Make Furniture Joints (072200892) Aim: The aim of this module to be develop knowledge, skills and understanding of making different types of joints being used for furniture manufacturing.	LU1: Prepare joints as per design / drawing LU2: Assemble joints	40	160	200
Module 8: Apply surface aesthetics (072200894) Aim: The aim of this module to be develop advanced knowledge, skills and understanding to apply surface aesthetics on the furniture.	LU1: Perform profiling of components LU2: Perform turning of components LU3: Perform Carving Manually LU4: Perform Marquetry/Parquetry Manually	20	80	100
Module 9: Assemble Furniture Products (072200893) Aim: The aim of this module to be develop basic knowledge, skills and understanding required to assemble the furniture products.	LU1: Pre-assemble furniture parts LU2: Assemble furniture parts	04	16	20

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Module-1

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Modules

Module 1: Comply with Perform Personal Health and Safety Guidelines

Objective: This Competency Standard identifies the competencies required to protect/apply occupational Safety, health and Environment at workplace according to the industry's approved guidelines, procedures and interpret environmental rules/regulations. Trainee will be expected to identify and use Personal Protective Equipment (PPE) according to the work place requirements. The underpinning knowledge regarding Observe Occupational Safety and Health (OSH) will be sufficient to provide the basis for the job at workplace.

Duration: 30 Hours Theory: 06 Hours Practice: 24 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Identify Personal Hazards at Workplace	The trainee is able to: • Identify risk to personal health • Identify hygiene and safety at work place • Identify processes • Identify tools, equipment and consumable materials that have the potential to cause harm • Report, identified risk to Health, hygiene and safety to concerned				
LU2. Apply Personal Protective and Safety	The trainee is able to: • List the Personal Protective equipment				

Equipment (PPE)	• Select personal protective equipment in terms of type and quantity according to work orders. • Wear personal protective equipment according to job requirements. • Clean personal protective equipment • Stored Personal Protective equipments in proper place after use.				
LU3. Comply Occupational Safety and Health (OSH)	The trainee is able to: • Maintain cleanliness and hygiene as per organizational policy • Comply with Health, hygiene and safety precautions before starting work • Comply organizational Health, hygiene and safety guidelines during work • Deal with resolvable problems				

	according to prescribed procedures • Report un resolvable problems to concerned • Place the tools equipment etc at their prescribed place after completion of work				
LU4. Dispose of hazardous Waste/materials from the designated area.	The trainee is able to: • Identify hazardous waste materials which needs to be disposed off • Segregate hazardous or non-hazardous waste carefully from the designated area as per approved procedure • Use proper disposal hazardous containers for dispose-off hazardous waste as per procedure • Take necessary precautions like putting masks and gloves while disposing hazardous waste/ materials as per standard operating procedure				

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Module-2

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Module 2: Communicate the Workplace Policy and Procedure

Objective: This unit describes the performance outcomes, skills and knowledge required to develop communication skills in the workplace. It covers gathering, conveying and receiving information, along with completing assigned written information under direct supervision.

Duration: 20 Hours Theory: 04 Hours Practice: 16 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Identify workplace communication procedures	The trainee is able to: • Identify organizational communication requirements and workplace procedures with assistance from relevant authority • Identify appropriate lines of communication with supervisors and colleagues. • Seek advice on the communication method/equipment most appropriate for the task				

LU2. Communicate at workplace	The trainee is able to: • Use effective questioning, and active listening and speaking skills to gather and convey information • Use appropriate non-verbal behavior at all times • Encourage, acknowledge and act upon constructive feedback				
LU3. Draft Written Information	The trainee is able to: • Identify and comply with required range of written materials in accordance with organizational policy and procedures • Draft and present assigned written information for approval, ensuring it is written clearly, concisely and				

	within designated timeframes. • Ensure written information meets required standards of style, format and detail. • Seek assistance and/or feedback to aid communication skills development				
LU4. Review Documents	The trainee is able to: • Check draft for suitability of tone for audience, purpose, format and communication style • Check draft for readability, grammar, spelling, sentence and paragraph construction and correct any inaccuracies or gaps in content. • Check draft for				

	sequencing and structure • Check draft to ensure it meets organizational requirements • Ensure draft is proofread, where appropriate, by supervisor or colleague				

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Module 3: Perform Basic Communication (Specific)

Objective: This unit describes the skills and knowledge required to assist in the development of communication competence by providing information regarding different forms of communication and their appropriate use.

By the end of this program, learners will be able, to communicate more effectively and efficiently by: working in a team, follow supervisor's instructions and develop generic communication work skills at workplace

Duration: 30 Hours Theory: 06 Hours Practice: 24 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Communicate in a team to achieve intended outcomes	The trainee is able to: • Treat team members with respect • Maintain positive relationships to achieve common organizational goals • Get work related information from team • Identify interrelated work activities to avoid confusion				

	• Adopt communication skills, which are designed in a team. • Identify problems in communication with a team • Resolve Communication barrier through discussion and mutual agreement				
LU2. Follow Supervisor's instructions as per organizational SOPs	The trainee is able to: • Receive the instructions from Supervisor • Carry out the instructions of the supervisor • Report to the supervisor as per organizational SOPs				

LU3. Develop Generic communication skills at workplace	The trainee is able to: • Develop basic reading skills • Develop Basic writing Skills • Develop basic listening skills				

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Module 4: Perform Basic Computer Application (Specific)

Objective: This unit describes the skills and knowledge required to use spreadsheet to prepare a page of document, develops familiarity with Word, Excel, Access, PowerPoint, email, and computer graphics basics.

It applies to individuals who perform a range of routine tasks in the workplace using a fundamental knowledge of spreadsheets, Microsoft office and computer graphics in under direct supervision or with limited responsibility.

Duration: 40 Hours Theory: 08 Hours Practice: 32 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Create Word Documents	The trainee is able to: • Open word processing application • Create a word document • Customize page layout with relevant name setting • Set up page in a word document • Edit word document as required • Use simple formatting tools when creating the document • Save word document to directory • Insert table in a word document • Insert appropriate				

	images into document as necessary • Insert header/footer in a word document • Insert section break in a word document • Set style in word document • Select basic Print settings • Print the document				
LU2. Use internet for Browsing	The trainee is able to: • Use search engines to open website • Search data on different topics • Refine search to increase relevance of information or content • Navigate a website to access the information or content required				

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Module-5

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Module 5: Develop drawings of furniture products manually

Objective of the module: The aim of this module to be develop knowledge, skills and understanding to develop drawings of furniture products manually.

Duration: 140 Hours Theory: 28 Hours Practical: 112 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Develop component and size chart	The trainee will be able to: • Record measurements of all components of the product • Prepare drawing measurements as per plotter/paper scale	• Identification of various furniture components • Understanding of measurement units and their usage • Introduction to conversion of measurements (Area, Volume, Average) • Introduction to measurement tools & their types • Introduction to Standard paper sizes • Understanding of drawing scaling methods	Total 30 Theory: 06 Practical: 24	Basic Furniture Items (Blocks, Shapes) Assembled & Unassembled furniture (Tables, Chairs, Racks) Measuring rules (Steel Rule Steel tape	Theory & Practical both shall be conducted in Drawing Studio equipped with teaching aids
LU2: Prepare 2D Multiview drawing of Furniture	The trainee will be able to: • Prepare drawing workstation including all required tools and equipment	• Introduction to various drafting tools and explain their usage • Techniques of paper fixation	Total 65 Theory: 13	Drafting table Drawing board Drafting Machine Set Square	Drawing Studio equipped with teaching aids

	• Draw 2D Multiview of the product as per required measurements • Apply Hatches on the drawing to identify component material and Upholstery • Draw symbols on the drawing to identify hardware • Mention all dimensions on the drawing	• Knowledge of basic drawing shapes, angles & their types • Understanding of drawing dimensions • Introduction & drafting of various drawing views (Front, Side, Top, Sections etc.) • Understanding of of title strip contents • Introduction & applications of hatch patterns of furniture • Identify standard/prevailing symbols used in furniture drawing • Knowledge of paper cutting & folding requirements	Practical: 52	T-square Pencils (2H, 3H, 2.5 H.B.,) Drawing Sheets Rubbers Pencil Sharpeners Geometry Box (Compass, Protector, Shape templates, Text template) French Curves Paper Tape (1/2" or ¾")	
LU3: Prepare 2D Multiview drawing of Furniture Components	The trainee will be able to: • Draw 2D Multiview of all components of the product as per required	• Identify Furniture components • Understanding of Hatch pattern for material & upholstery • Understanding of detailed drafting of various views of Furniture components (Front, Side, Top,	Total 45 Theory: 09	Unassembled furniture components (Table, Chair, Racks)	Drawing Studio equipped with teaching aids

	measurements • Apply Hatches on the drawing to identify component material and Upholstery • Draw symbols on the drawing to identify hardware • Mention all dimensions on the drawing	Sections etc.) • Identification of standard/prevailing symbols used in furniture components & hardware	Practical: 36		

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Module-6

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Module 6: Prepare wooden components of the furniture

Objective of the module: The aim of this module to be develops knowledge, skills and understanding of preparing wooden components of the furniture.

Duration: 60 Hours Theory: 12 Hours Practical: 48 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Cut wood logs into Planks	The trainee will be able to: • Ensure alignment of log on machine trolley • Cut planks from log as per size requirements • Mark and record the sizes of planks • Stack the planks as per seasoning requirement	• Introduction to various methods of log conversion • Understanding of commonly used seasoning methods and their benefits • Introduction to various types, parts of cutting blades & saws • Introduction to saw blade sharpening & setting machines • Introduction to Butt welding machine • Understanding of marking the size on planks & enter in stock register • Understanding of stacking requirements for various seasoning methods	Total 12 Hours Theory: 02 Hours Practical: 10 Hours	Wooden Logs Log band saw or wood miser Log sawing blades Log band saw Blade sharpening machines Saw setting machine Butt welding machine Grinding machine Blade cutter	Theory Classroom Practical Workshop
LU2: Prepare	The trainee will be able to: • Paste the drawing on	• Understanding commonly used tracing tools and techniques	Total 12 Hours	Drawing sheet Paper cutter	Theory Classroom

templates for furniture components	the template material (Ply Wood, Medium Density Fibre Board, Solid Wood etc.) • Cut the template as per drawing • Finish the edges of template to achieve accurate profile	• Application of drawing or templates • Introduction of jigs, fixtures and fences used in cutting • Introduction to various cutting machines/ hand saws • Introduction to various shaping tools & machines	Theory: 02 Hours Practical: 10 Hours	Template material (Plywood or M.D.F. or Wood) Tracing Pencil Spindle Molder Plunge router Jig saw Scroll Saw Copying Saw Fret Saw Half round file Half round rasps	Practical Workshop
LU3: Cut wood planks into furniture components	The trainee will be able to: • Trace various components on the plank using drawings/template considering wood grains while maintaining cutting efficiency/average • Cut furniture components from planks as per tracing or using	• Application of drawing or templates • Application of jigs, fixtures and fences used in cutting • Introduction to various cutting machines/ hand saws • Application of various shaping tools & machines	Total 13 Hours Theory: 03 Hours Practical: 10 Hours	Band Saw Wooden planks Scroll Saw Compass saw Multiple rip saw Cross cut saw Table saw	Theory Classroom Practical Workshop

	jigs/fixtures/fences				
LU4. Cut board/ panels into furniture components	The trainee will be able to: • Trace various components on the board / panel using drawings/template while maintaining cutting efficiency/average for curved work/job • Cut furniture components from board / panel as per size using fences	• Introduction & properties of various types of boards (Chipboard, Fibre boards, Block board, W.P.C etc.) • Understanding of application of drawing / templates • Introduction & application of jigs, fixtures and fences used in cutting • Introduction & application of various cutting machines/ hand saws • Introduction to various shaping tools & machines	Total 10 Hours Theory: 02 Hours Practical: 08 Hours	Board sheets Table saw Panel saw or Beam Saw Edge Banding Machine Jigs & Fixtures	Theory Classroom Practical Workshop
LU5. Plane surfaces of wooden components	The trainee will be able to: • Plane the surface of work piece to maintain surface evenness / smoothness • Plane edges of work piece to maintain right angle	• Introduction & operations of jointer • Knowledge of operations of portable planner • Introduction, Parts and operations of Jointer • Introduction & Operations of 4-Side planner. Understanding of alignment of fences at desired angles	Total 09 Hours Theory: 02 Hours Practical: 07 Hours	Wooden components Jointer Portable planner 4-Side Planner	Theory Classroom Practical Workshop
LU6. Finalize the size of wooden	The trainee will be able to: • Plane the work piece to achieve required	• Understanding of thickness planning machine and its operations	Total 04 Hours Theory:	Thickness planner	Theory Classroom

components	thickness • Plane the work piece to achieve required width • Cut the work piece to achieve final size as per drawing	• Understanding of surface planning requirements and its basic quality parameters	01 Hours Practical: 03 Hours		Practical Workshop

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Module-7

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Module 7: Make Furniture Joints

Objective of the module: The aim of this module to be develop knowledge, skills and understanding of making different types of joints being used for furniture manufacturing.

Duration: 200 Hours Theory: 40 Hours Practical: 160 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform Cutting	The trainee will be able to: • Practice the cross cutting • Practice the cross cutting in specific size/give size • Practice the ripping • Practice the ripping in size • Cut in curve as per mark if required as per drawing	• Introduction & uses of hand tools o Hand Saws o Squaring Tools o Marking Tools • Sharpening of saw blade	Total 10 Hours Theory: 02 Hours Practical: 08 Hours	Rip Saw Cross cut saw Bench Hook Copying saw Compass saw Saw vice Triangular file Flat file Wood pieces	Theory Classroom Practical Workshop
LU2. Perform Plaining	The trainee will be able to: • Plane the first face	• Introduction & uses of hand tools o Hand Planes o Wood Chisels	Total 30 Hours	Smooth plane Jack plane Bevel Edge	Theory Classroom

	of the piece • Plane the edge at right angle • Mark the piece to plane in desired thickness • Plane the piece up to the marking to achieve desired size in thickness • Mark and plane the edge to achieve the desired width.	○ Squaring Tools ○ Marking Tools • Sharpening of saw blade	Theory: 03 Hours Practical: 27 Hours	chisel Mortise Chisel Try square Marking gauge Oil Stone Wood pieces	Practical Workshop
LU1: Prepare joints as per design / drawing	The trainee will be able to: • Mark joint lines as per drawing • Perform Ripping as per joint requirement • Perform Chiselling as per joint requirement • Perform Cross Cutting as per joint	• Introduction to Structure of trees • Classification & properties of trees • Introduction to defects, abnormalities in Wood/ timber • Introduction to wood Preservation methods • Characteristics of various woods • Introduction to various wood cutting methods used in Joint making (Ripping, Cross Cutting, Mitre Cutting, Curve Cutting etc.)	Total 120 Hours Theory: 24 Hours Practical: 96 Hours	Wooden planks Hand Planes (Smooth Plane, Rabbet plane, Jack plane, Spoke shave, Compass plane, Block plane, Trying plane) Hand Saws (Rip Saw, Cross cut saw, back saw,	Theory Classroom Practical Workshop

	requirement • Perform Boring as per joint requirement • Perform Rabbeting / Grooving as per joint requirement • Perform Sizing of joint as per drawing	• Introduction & uses of hand tools o Hand Saws o Hand Planes o Wood Chisels o Boring braces & bits o Squaring Tools o Marking Tools o Clamps o Files & rasps o Mallets & Hammers o Sharpening stones o Saw set plier o Saw vice o Mitre box o Dovetail template • Introduction & kinds of joints o Lap joint (Middle Lap, End Lap, T Lap) o Mortise and Tenon Joint Types (Open Mortise and Tenon, Hunch Tenon and Mortise, Wedge Tenon and Mortise, Key Tenon and Mortise, Double Tenon and Mortise, Open Mortise Mitre and Tenon) o Dowel Joint		mitre saw, compass saw, copying saw, fret saw, veneer saw, Saw vice) Chisels (Bevel edge chisel, Mortise chisel) Marking Tools (Marking gauge, Mortise guage, Marking awl, Utility knife) Squaring Tools (Try square, Framing square, Spirit level, Combination square) Clamps (Bar clamp, F-clamp, C-clamp, Quick action clamp, edge clamp, wooden clamp) Carpenter's mallet Claw Hammer	

		○ Domino Joint ○ Pin Joint ○ Dove Tail Joint ○ Biscuit Joint ○ Tongue and Groove Joint ○ Knock Down Joint ○ Mitre Joint ○ Nail Joint ○ Screw Joint ○ Cross Bar Joint ○ Etc……		Oil stone Pincer Nail punch Files & Rasps (Half round file, triangular file, round file, Half round rasps) Mitre box K. D. fittings	
LU2: Assemble joints	The trainee will be able to: • Join components to prepare furniture parts as per design • Apply reinforcements (Spline, Pins, Nails, Dowels etc.) as per joint requirement	• Introduction to screwdrivers • Introduction to pneumatic nailer & screwdriver • Introduction & uses of adhesives • Introduction and uses of various joint reinforcements ○ Nails ○ Pins ○ Screws ○ Dowels ○ Dominos ○ Splines ○ Corrugated Fasteners	Total 40 Hours Theory: 08 Hours Practical: 32 Hours	Nails (Different Sizes) Wooden/Steel Screws (Different Sizes) Wooden Dowels & Dominos Corrugated fasteners & splines Multi Boring Machine Adhesives (White glue, Hot melt	Theory Classroom Practical Workshop

		○ Brackets (Wooden/Metal)		glue, urea formaldehyde, Phenol Formaldehyde, Contact cement) Screws Drivers (Standard screwdriver, Ratchet screwdriver, Philips head screwdriver) Pneumatic Nailer & Screwdriver	

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Module-8

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Module 8: Apply surface aesthetics

Objective of the module: The aim of this module to be develop advanced knowledge, skills and understanding to apply surface aesthetics on the furniture.

Duration: 100 Hours Theory: 20 Hours Practical: 80 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Perform profiling of components	The trainee will be able to: • Equip machine with required tools (cutters, blades, profiles, bits, Jigs, Fixtures etc.) • Perform profiling of straight components using required processes	• Introduction to various cutters, bits, profiles • Introduction to jigs, fixtures, tool setting& fences • Introduction & Operations of spindle moulder • Introduction & operations of plunge router • Introduction & operations of double end tenoner	Total 30 Hours Theory: 06 Hours Practical: 24 Hours	Wood plank/Pieces Board pieces Cutters (various profile cutter Sets, grooving cutters etc.) Bits (Straight, profile, V-grooving etc.) Solid profiles Plunge router	Theory Classroom Practical Workshop

	(Grooving, Rabbeting, Tenoning, Mortising, Shaping etc.) as per drawing • Perform profiling of curved components using required processes (Grooving, Rabbeting, Tenoning, Mortising, Shaping etc.) as per drawing			Spindle Molder Double End tenoner Ring attachment 4-Side Planner/Moulder	
LU2: Perform turning of components	The trainee will be able to: • Equip machine with required tools (Chucks, chisels, gouges, Fixtures etc.) • Perform Cylinder turning of components to achieve required finish as per drawing	• Introduction and operations of Wood turning lathe • Introduction to various types of turning chucks • Introduction to turning chisels & gouges • Understanding of Setting/ adjustment as per desired operation (Cylinder or face plate turning) • Introduction & importance of	Total 20 Hours Theory: 04 Hours Practical: 16 Hours	Wood blocks Wood turning lathe Turning chucks Turning chisels & gouges Sand papers Caliper's (Inside & Outside)	Theory Classroom Practical Workshop

	• Perform face plate turning of components to achieve required finish as per drawing • Perform buffing of the components as per product requirement	sanding and buffing			
LU3: Perform Carving Manually	The trainee will be able to: • Align the work piece on workstation • Paste the drawing paper on work pieces as per process requirement • Mark the carving design on work piece using template as per process requirement • Carve the design using required tools (Chisel, Gouges etc.) as per drawing or marking • Perform sanding on carved design to achieve required smoothness	• Application of various Clamps • Pasting/ marking of design on carving surface • Introduction to kinds of carving • Understanding the usage of carving tools (Chisels) • Understanding the usage of boring machines • Introduction to basic sanding	Total 25 Hours Theory: 05 Hours Practical: 20 Hours	Wood planks Board pieces (M.D.F. or H.D.F.) Carving Chisel Set Carver's vice Hold fast Pencils Drawing Sheets Sanding papers Portable Electric drill Drill Press Boring bit (Various sizes & types)	Theory Classroom Practical Workshop

LU4: Perform Marquetry/Parquetry Manually	The trainee will be able to: • Paste Marquetry/ Parquetry drawing on Veneer sheets • Align multiple veneer sheets as per tool (Scroll Saw, Copying Saw, Fret Saw) capacity • Bore blade entry holes on the Veneer sheets as per process requirement • Cut veneer sheets as per Marquetry/ Parquetry drawing • Paste Marquetry/ Parquetry Veneer Layer on required board as per product design • Fill gaps of cutting faults to achieve required Marquetry/ Parquetry finish	• Introduction to veneer, kinds and sources of Veneer • Introduction to veneer cutting methods • Understanding of Veneer application techniques • Explaining the usage of Veneer Cutting tools& machines • Explaining the Veneer quality requirements (Grains, thickness, figure etc.) • Alignment of sheets to process for cutting • Introduction to Pasting & pressing of veneer • Introduction to gap filling • Introduction & Operation of veneer cutting machine • Introduction & Operation of veneer splicer • Introduction & Operation of glue spreader • Introduction & Operation of hydraulic hot press • Introduction & Operations of scroll saw • Introduction & operations of oscillating sander.	Total 25 Hours Theory: 05 Hours Practical: 20 Hours	Veneer lengths Veneer samples Board pieces Scroll saw Veneer splicer Veneer cutting machine Glue spreader Hydraulic hot press Veneer tape roll Thread roll Urea formaldehyde glue Hot Melt Glue Glue Gun	Theory Classroom Practical Workshop

FURNITURE TECHNICIAN

Module-9

CBT CURRICULUM

National Vocational Certificate Level 2

Version 1 - April, 2019

Module 9: Assemble Furniture Products

Objective of the module: The aim of this module to be develop basic knowledge, skills and understanding required to assemble the furniture products.

Duration: 20 Hours Theory: 04 Hours Practical: 16 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Pre-assemble furniture parts	The trainee will be able to: • Prepare surface of components by Sanding before pre-assembly • Assemble the components to prepare structures of furniture parts maintaining required alignment and angles • Polish assembled structures to achieve required semi-finish	• Introduction & Operations of sanding machines (Universal belt sander, Edge Sanding, Drum Sanding, Portable sanders) • Application of various Clamps • Understanding the usage of carcass press • Understanding various furniture assembly techniques considering angles • Understanding of assembly drawing	Total 08 Hours Theory: 02 Hours Practical: 06 Hours	Universal belt sander Edge Sander Drum Sander Sanding belt Portable belt sander Orbital sander	Theory Classroom Practical Workshop
LU2: Assemble	The trainee will be able to: • Fix pre-assembled	• Application of various hardware and accessories (Locks, Hinges, Handles, Catchers, Casters etc.)	Total 12 Hours	Brackets Dowels	Theory Classroom

furniture parts	parts into final product maintaining required alignment and angles • Attach hardware and accessories as per product design	• Understanding the usage of various assembly tools and equipment	Theory: 03 Hours Practical: 09 Hours	Glue Drawer railings Handles Locks Casters Catchers	Practical Workshop

General assessment guidance for (Furniture Technician)

Good practice in Pakistan makes use of sessional and final assessments, the basis of which is described below. Good practice by vocational training providers in Pakistan is to use a combination of these sessional and final assessments, combined to produce the final qualification result.

Sessional assessment is going on all the time. Its purpose is to provide feedback on what students are learning:

- to the student: to identify achievement and areas for further work
- to the teacher: to evaluate the effectiveness of teaching to date, and to focus future plans.

Assessors need to devise sessional assessments for both theoretical and practical work. Guidance is provided in the assessment strategy

Final assessment is the assessment, usually on completion of a course or module, which says whether or not the student has "passed". It is – or should be – undertaken with reference to all the objectives or outcomes of the course, and is usually fairly formal. Considerations of security – ensuring that the student who gets the credit is the person who did the work – assume considerable importance in final assessment.

Methods of assessment

For lessons with a high quantity of theory, written or oral tests related to learning outcomes and/ or learning content can be conducted. For workplace lessons, assessment can focus on the quality of planning the related process, the quality of executing the process, the quality of the product and/or evaluation of the process.

Methods include direct assessment, which is the most desirable form of assessment. For this method, evidence is obtained by direct observation of the student’s performance.

Examples for direct assessment of a Furniture Technician include:

- Work performances, for example cutting a curve or circle on various machines, making profiles on wooden pieces, make a carving pattern on wood piece, preparing a job report,
- Demonstrations, for example demonstrating advanced cutting, plaining methods, profiling methods, marquetry, carving, finishing techniques
- Direct questioning, where the assessor would ask the student why he is using the current material for the said job, or how the student prepare job in current sizing, how a job can be performed using various techniques including the future trends
- Paper-based tests, such as multiple choice or short answer questions on material management, machine operations, hand tools, finishing, Metal fabrication, upholstery, marquetry, carving, CAD/CAM operations or developing productive working relationships with associates.

Indirect assessment is the method used where the performance could not be watched and evidence is gained indirectly.

Examples for indirect assessment of a Furniture Technician include:

- Work products, such as a completed furniture article
- Workplace documents, such as a list of materials being used in developing the product.

Indirect assessment should only be a second choice. (In some cases, it may not even be guaranteed that the work products were produced by the person being assessed.)

Principles of assessment

All assessments should be valid, reliable, fair and flexible:

Fairness means that there should be no advantages or disadvantages for any assessed person. For example, it should not happen that one student gets prior information about the type of work performance that will be assessed, while another candidate does not get any prior information.

Validity means that a valid assessment assesses what it claims to assess. For example, if complex cooking skills are to be assessed and certificated, the assessment should involve performance criteria that are directly related to that cooking activity. An interview about the effect of the cooking processes on different foods would not meet the performance criteria.

Reliability means that the assessment is consistent and reproducible. For example, if the work performance of preparing and cooking a complex poultry dish has been assessed, another assessor (e.g., the future employer) should be able to see the same work performance and witness the same level of achievement.

Flexibility means that the assessor has to be flexible concerning the assessment approach. For example, if there is a power failure during the assessment, the assessor should modify the arrangements to accommodate the students' needs

Assessment strategy for (Furniture Technician)

This curriculum consists of 11 modules:

Module 1: Develop drawings of furniture products manually

Module 2: Prepare wooden components of the furniture

Module 3: Make Furniture Joints

Module 4: Apply surface aesthetics

Module 5: Assemble Furniture Products

Module 6: Perform finishing operations

Module 7: Perform Upholstery

Module 8: Develop Metal Furniture Products

Module 9: Handle Logistics

Module 10: Develop drawings of furniture products using CAD/CAM

Module 11: Apply surface aesthetics using CNC Machines

Sessional assessment

The sessional assessment for all modules shall be in two parts: theoretical assessment and practical assessment. The sessional marks shall contribute to the final qualification.

Theoretical assessment for all learning modules must consist of a written paper lasting at least one hour per module. This can be a combination of multiple choice and short answer questions.

For practical assessment, all procedures and methods for the modules must be assessed on a sessional basis. Guidance is provided below under Planning for assessment.

Final assessment

Final assessment shall be in two parts: theoretical assessment and practical assessment. The final assessment marks shall contribute to the final Commutative grading (qualification).

The final theoretical assessment shall consist of one 3-hour paper. The paper shall be in two parts.

Part A shall last for 2 hours and shall consist of half multiple choice and half short-answer questions. This part shall cover the major furniture technician modules:

Module 5: Develop drawings of furniture products manually

Module 6: Prepare wooden components of the furniture

Module 7: Make Furniture Joints

Module 8: Apply surface aesthetics

Module 9: Assemble Furniture Products

Part B shall last for 1 hour and shall consist of short answer and at least two extended answer questions.

For the final practical assessment, each student shall be assessed over a period of two days, with two 3-hour sessions on each day. This represents a total of four sessions comprising 12 hours of practical assessment for each student. During this period, each student must be assessed on his/her ability to produce one furniture article as per drawing.

The assessment team

The number of assessors must meet the needs of the students and the training provider. For example, where two assessors are conducting the assessment, there must be a maximum of five students per assessor. In this example, a group of 20 students shall therefore require assessments to be carried out over a four-day period. For a group of only 10 students, assessments would be carried out over a two-day period only.

Planning for assessment

Sessional assessment: assessors need to plan in advance how they will conduct sessional assessments for each module. The tables on the following pages are for assessors to use to insert how many hours of theoretical and practical assessment will be conducted and what would be the scheduled dates. .

Final assessment: Training providers need to decide ways to combine modules into a cohesive two-day final assessment Programme for each group of five students. Training providers must agree the furniture articles for practical assessments in advance.

Complete list of tools and equipment

Complete list of tools and equipment

Sr#	Name of Item/ Equipment/ Tools	Specification	Quantity	Unit
1	Fire extinguishers	Standard	6	Nos.
2	First Aid box	(Including all accessories)	2	No.
3	Water & sand buckets	(3-5 litre capacity)	2	Sets
4	Portable Dust collectors	(two way)	3	Sets
5	Air blower	(Electric portable)	3	Nos
6	Exhaust units		5	Units
7	Emergency alarm	(fire, smoke)	1	Set
8	Announcement system	(with mic & 3 speakers)	1	Set
9	Cordless system	(1 hub with 5 units)	1	Set
10	Computer	(I-7, VII th generation, 500GB Hard, 8GB RAM)	26	Nos.
11	Laser Printer	(A4) (33 PPM, Duplex printing)	1	No.
12	Scanner	(A4) (600-1200 dpi resolution)	1	No.
13	Steel rule	(1 ft)	25	Nos.
14	Steel tape	(3, 5 Mtr)	25	Each.
15	Drafting table	(900 x 750 x 750 mm (H)	25	Nos.
16	Drawing board	(700 x 500 mm)	25	Nos.
17	Drafting machine	(Height & angle adjustable, sliding arm)	2	Nos.
18	Set square	(Glass with scale marking, 450 & 600)	25	Sets
19	T-square	(Glass, 900 mm length)	25	Nos.
20	Log band saw or Wood miser Machine	(07-15 hp)	1	No.

21	Log band saw blade sharpening machine	(Angle adjustment)	1	No.
22	Saw setting machine		1	No.
23	Butt welding machine	(High temperature setting)	1	No.
24	Grinding machine	(Both side grinding discs)	1	No.
25	Blade cutter		1	No.
26	Paper cutter		1	No.
27	Tracing pencil		25	Nos.
28	Spindle molder Machine	(With various cutters, solid profile cutters)	1	No.
29	Plunge router	(1100-1800 w, micro adjuster)	3	Nos.
30	Jig saw	(600-900 w, 60-120 mm blade length)	3	Nos.
31	Scroll saw Machine	(16” throat depth, tilt able)	2	Nos.
32	Copying saw	(6-8” in size)	25	Nos.
33	Fret saw	(6-8” in size)	25	Nos.
34	Half round file	(10”)	25	Nos.
35	Half round rasp	(10”)	25	Nos.
36	Triangular file	(6”)	25	Nos.
37	Round file	(10”)	10	Nos.
38	Compass saw	(12-18”)	10	Nos.
39	Multiple rip saw Machine	(12-14” blades)	1	No.
40	Cross cut saw Machine	(12-14”)	1	No.
41	Table saw Machine	(rip capacity 600-850mm, cross cut capacity 900-2000)	1	No.
42	Panel saw Machine	(12-16’ x 10-12’)	1	No.
43	Jointer Machine	(18”)	1	No.
44	Portable planner	(6”)	1	No.
45	Thickness planner Machine	(10-18”)	1	No.
46	Smooth plane	(1.5-2”)	25	Nos.
47	Jack plane	(1.5-2”)	25	Nos.
48	Trying plane (1.5-2”)	(1.5-2”)	25	Nos.

49	Block plnae (1.5-2”)	(1.5-2”)	5	Nos.
50	Compass plane (1.5-2”)	(1.5-2”)	5	Nos.
51	Spoke shave plane (1.5-2”)	(1.5-2”)	5	Nos.
52	Rip saw (16-24”)	(16-24”)	25	Nos.
53	Cross cut saw (16-24”)	(16-24”)	25	Nos.
54	Back saw (10-12”)	(10-12”)	25	Nos.
55	Mitre saw	(12-16”)	2	Nos.
56	Copying saw	(8”)	25	Nos.
57	Work bench	(4’ x 4’ x 2.75’)	6	Nos.
58	Veneer saw	(4-6”)	25	Nos.
59	Saw vice	Standard	2	Nos.
60	Saw setting plier	(adjustable setting)	5	Nos.
61	Bevel edge chisel	(12, 20, 25, 30mm)	25	Sets
62	Mortise chisel	(2, 6, 8, 10, 12 mm)	25	Sets
63	Marking gauge	(single or two beam, 8”)	25	Nos.
64	Mortise gauge	(8”)	25	Nos.
65	Marking awl	(6”)	25	Nos.
66	Utility knife	(standard)	25	Nos.
67	Try square	(6”)	25	Nos.
68	Framing square	(2’)	5	Nos.
69	Combination square	(1’)	5	Nos.
70	Spirit level	(2-3’)	5	Each
71	Bar clamp	(4’, 5’, with T bar preferably)	3	Each
72	F-clamp	(1’, 2.5’, 4’, 5’,6’)	3	Each
73	Edge clamp		5	Nos.
74	Wooden clamp		5	Nos.
75	Quick action clamp	(12”, 24”)	5	Each
76	Carpenters mallet	1’	25	Nos.
77	Claw hammer	(350 g)	25	Nos.
78	Pincer		25	Nos.
79	Nail punch		25	Nos.

80	Mitre box		5	Nos.
81	Standard screw driver	(6”, 1’)	25	Each
82	Ratchet screw driver		25	Nos.
83	Philips head screw driver	(1’)	25	Nos.
84	Pneumatic nailer	(10-50 mm nails capacity)	3	Nos.
85	Pneumatic screwdriver		3	Nos.
86	Double end tenoner	(3000 mm capcity)	1	No.
87	Ring attachment		1	No.
88	Wood turning lathe	(2-5’ between centres)	1	No.
89	Turning chucks	(Standard, 4 jaw chuck)	3	Each
90	Turning chisels	(6 in set, different sizes)	2	Set
91	Turning gouges	(2 in set, different sizes)	2	Set
92	Inside calipers	(8”, 10”)	2	Each
93	Outside calipers	(8”, 10”)	2	Each
94	Carving chisel set	(55 in set)	3	sets
95	Carver’s vice		25	Nos.
96	Hold fast clamp		5	Nos.
97	Veneer samples	(100 x 100 mm) (20-30 sample per book)	3	Books
98	Veneer splicer	(900 mm throat depth)	1	No.
99	Veneer cutting machine	(8’)	1	No.
100	Glue spreader	(4’ wide)	1	No.
101	Hydraulic hot press	(2-3 plates)	1	No.
102	Universal belt sander	(8’)	1	No.
103	Edge sander	(3-4’)	1	No.
104	Drum sander	(4’)	1	No.
105	Portable belt sander	(4”)	2	Nos.
106	Orbital sander	(4-6”)	3	Nos.
107	Spray gun		3	Nos.
108	Nozzels		5	Nos.
109	Air compressor	(10-35 litre capacity)	2	Nos.

110	Spraying booth	Standard	1	No.
111	Powder coating plant		1	No.
112	Product hanging trolley		1	No.
113	Stitching machine		1	No.
114	Scissors		5	Nos.
115	Clamping device		5	Nos.
116	Portable grinder	(both side grinding discs)	2	Nos.
117	Hack saw	1’	3	Nos.
118	Sheet cutter		2	Nos.
119	Portable nibbler	Standard	2	Nos.
120	Rivet plier	Standard	2	Nos.
121	Drill press	(1-13 mm chuck)	1	No.
122	Portable electric drill	(1-13 mm chuck)	2	Nos.
123	Sheet bending press		1	No.
124	Arc welding plant	Portable	1	No.
125	Spot welding plant		1	No.
126	Gas welding plant		1	No.
127	Portable disc grinder	6-12”	1	No.
128	Cling foil binder		2	Nos.
129	Pneumatic stapler	(10-50 mm)	2	Nos.
130	Bar code printer		1	No.
131	Hand Pallet		3	Nos.
132	Manual fork lifter	10-15’ lift, 50 tilting	1	No.
133	CNC machining centre	(3-5 axes, ATC)	1	No.
134	CAM software	Art CAM or other	1	No.
135	CNC turning lathe		1	No.
136	Aggregates	(4 sided)	3	Units
137	Dust collection units		3	Units
138	CNC laser machine	(6 x 4’ or 8 x 4’ table)	1	No.
139	4-Side planner / moulder	(100-450 mm wide)	1	No.
140	Dovetail template	12”	3	No.

141	Compound mitre saw	(1')	1	No.
142	Projector	Standard	1	No.
143	Beam Saw	3600 x 2200 mm	1	No.
144	Portable thickness planner	10-12"	1	No.
145	Boring braces	150-300 mm	2	Nos.
146	Dowel Boring Machine		1	No.
147	Domino Joiner	6-12 mm	1	No.
148	Flame blower	Standard	1	No.
149	Carcass press	12 x 2' (approx)	1	No.
150	Portable circular saw	12" blade	1	No.
151	Portable planner	4-6" blade	1	No.
152	Portable sander	4-6"	1	No.
153	Biscuit Jointer	Standard	1	No.
154	Scissors	Standard	2	Nos.
155	Slot Mortiser	Variable 6-12 mm	1	No.
156	Spray booth	10' (approx)	1	No.
157	Bar clamps	4', 5'	5	Each
158	F clamp	1, 1.5, 2, 3, 5, 6'	5	Each
159	Quick action clamp	2'	5	Nos.
160	Cam clamp	1'	20	Nos.
161	C clamp	4"	10	Nos.
162	Mitre clamps	Standard	5	Nos.
163	Wire clamps	3"	10	Nos.
164	Mitre plier	Standard	2	Nos.
165	Pin hammer	100 g	5	Nos.
166	Measuring tape	3 M	25	Nos.
167	Stitching Machine	Standard	1	No.
168	Internet device	Standard	1	No.
169	Wi-fi router	Standard	1	No.
170	Strap clipper	Standard	2	Nos.
171	Strap punch	Standard	2	Nos.

172	Wrapping Machine	Standard	1	No.
173	Cutting blades	TCT, 10-14”	5	Each
174	Chain Mortiser Machine or Slot Mortiser Machine	8, 10 mm	1	No.
175	Finishing line for boards		1	Set
176	Multimedia Projector		2	Units
177	Projection Screen		2	Nos
178	Multi Boring Machine		1	No
179	Edge Banding Machine	0.3-8 mm,	1	No.
180	Planner blades	As per machine	5	Units
181	Cordless screwdriver	18 v	2	Nos
182	Pneumatic drill machine		2	Nos
183	Pneumatic screwdriver		2	Nos
184	Hose Pipe with quick coupling set		2	Sets

Sr#	Name of Consumable Supplies	Quantity
1	Gloves	
2	Apron	
3	goggles	
4	Dust mask	
5	Chemical hazard mask	
6	Safety shoes	
7	Ear plugs	
8	Brushes	
9	Phenyl powder	
10	Report templates	
11	Paper (A4)	
12	Note pad	
13	Record register	
14	Pencils (3H, 2H, & 2.5 H.B.)	
15	Basic Furniture items (blocks, shapes)	
16	Assembled furniture products (Table, chair, racks)	
17	Unassembled furniture products (Table, chair, racks)	
18	Drawing sheets	
19	Rubbers	
20	Pencil sharpners	
21	Geometry box (Protector, Shape templates, text template, compass)	
22	French curves	
23	Paper tape (1/2”, ¾”)	
24	Wooden logs	
25	Log sawing blades	
26	Plywood (8x4 x 3mm)	
27	Plywood (8x4 x 6 mm)	

28	M.D.F. (8’ x 4’x 3 mm)	
29	M.D.F. (8’ x 4’ x 7 mm)	
30	M.D.F. (8’x 4’ x 16 mm)	
31	Oil stone	
32	Knock down fittings (various types)	
33	Nails (1” x 17, ½” x 20, 1-1/2” x 14)	
34	Screws (1/2” x 4,6, ¾” x 8, 1”,1.5” x 8)	
35	Dowels (8 x 35mm, 10 x 45mm)	
36	Domino (25 x 35, 25 x 45)	
37	Corrugated fasteners	
38	White glue	
39	Hot melt glue sticks	
40	Glue gun	
41	Urea formaldehyde glue	
42	Contact cement (Samad)	
43	Wood planks	
44	Board pieces	
45	Profile cutters (various designs)	
46	Profile cutter (bevel angle)	
47	Straight profile	

48	v-grooving profile	
49	Solid profile (various designs)	
50	Sand paper (80, 100,140, 220,320)	
51	Veneer tape roll	
52	Thread roll	
53	Sanding belt (as per machine)	
54	Drawer railing (12”, 14”, 18”)	
55	Handles	
56	Locks (Drawer lock, mortise lock, rim lock, century lock, pad lock)	
57	Casters	
58	Catchers	
59	Sand papers grits (80, 100, 140, 220, 320)	
60	Putty (Chalk powder, color, glue, water, plaster of paris, zinc)	
61	Stains (Various colours)	
62	Methylated spirit	
63	Oils (various)	
64	Liquid ammonia	
65	Sealer	

66	Lacquers (Various)	
67	Thinner	
68	Undercoat	
69	N. C. paints	
70	Leafing papers (various)	
71	Wax (box and sticks)	
72	Foam (1”, 1.5”, 2”, 4”, 6” in thickness)	
73	Sofa cloth (various designs)	
74	Leather	
75	Leatherite	
76	Rubber strips	
77	Shoe tacks	
78	Springs	
79	Cotton dori	
80	Jute	
81	Markeen cloth	
82	Thread	
83	Buttons	
84	Paper tape	

85	Marking chalk	
86	Needles	
87	U-pins	
88	Natural cane	
89	Synthetic cane	
90	Metal sheets	
91	Metal pipe (20 x 20, 25 x 25, 40 x 20, 40 x 12, 38 x 38 mm)	
92	Angle iron (various size)	
93	Grinding disc (various size)	
94	Boring bits (3, 4,5,6,8,10,12,20,25,30 mm)	
95	Rivets (12, 20, 30, 40, 50 mm)	
96	Grinding disc	
97	Welding rods	
98	Knock down fittings (various kinds)	
99	Brackets	
100	Corrugated sheet	
101	Bubble wrap	
102	Jumbolan	
103	Polythene wrap	

104	Cling foil	
105	Packing roll	
106	Plastics (various thickness)	
107	u-pins (12, 20)	
108	Software CD’s	
109	Drawing roll	
110	CNC bits	
111	CNC cutters	
112	Wooden blocks	
113	CNC turning tools (bits, wheels)	
114	Profiles & bits	
115	Laser tube	
116	Jigs & Fixtures	
117	Health & Safety manual	
118	Spray nozzles	
119	Solid profiles	
120	Seasoning stacking model	
121	Horse rack	
122		

Credit values

The credit value of the Furniture Technician National Certificate Level 4 in Furniture Technicians defined by estimating the amount of time/ instruction hours required to complete each competency unit and competency standard. The NVQF uses a standard credit value of 1 credit = 10 hours of learning (Following Higher Education Commission (HEC) guidelines.

The credit values are as follows:

Competency Standard		Estimate of hours	Credit
A:	Develop drawings of furniture products manually	140 Hours	14
B:	Prepare wooden components of the furniture	60 Hours	06
C:	Join components of the furniture	200 Hours	20
D:	Apply surface aesthetics	100 Hours	10
E:	Assemble furniture products	20 Hours	02
F:	Perform finishing operations	120 Hours	12
G:	Perform Upholstery	100 Hours	10
H:	Develop Metal Furniture Products	110 Hours	11

Competency Standard	Estimate of hours	Credit
I: Handle Logistics	20 Hours	02
K: Develop drawing of furniture products using CAD/CAM	140 Hours	14
L: Apply surface aesthetics using CNC machines	190 Hours	19

National Vocational and Technical Training Commission (NAVTTC)

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